

WHAT IS CLAIMED IS:

- 1                   1.     An isolated CLASP-2 polynucleotide, wherein said polynucleotide is  
2                   (a) a polynucleotide that has the sequence of SEQ ID NO: 1, 3, 5 or 9; or  
3                   (b) a polynucleotide that hybridizes under stringent hybridization conditions to  
4                   (a) and encodes a polypeptide having the sequence of SEQ ID NO: 2, 4, 6 or 10 or an allelic  
5                   variant or homologue of a polypeptide having the sequence of SEQ ID NO: 2, 4, 6 or 10; or  
6                   (c) a polynucleotide that hybridizes under stringent hybridization conditions to  
7                   (a) and encodes a polypeptide with at 25 contiguous residues of the polypeptide of SEQ ID  
8                   NO: 2, 4, 6 or 10; or  
9                   (d) a polynucleotide that hybridizes under stringent hybridization conditions to  
10                  (a) and has at least 12 contiguous bases identical to or exactly complementary to SEQ ID NO:  
11                  1, 3, 5 or 9.
- 1                   2.     The polynucleotide of claim 1, wherein said polypeptide specifically  
2                   binds to a PDZ domain of PSD95, DLG1 or neDLG.
- 1                   3.     The polynucleotide of claim 2, wherein said polypeptide has a binding  
2                   affinity of at least  $10^4 \text{ M}^{-1}$  for binding PSD95, DLG1 or neDLG.
- 1                   4.     The polynucleotide of claim 1 that encodes a polypeptide having the  
2                   full-length sequence of SEQ ID NO: 2, 4, 6 or 10.
- 1                   5.     The isolated polynucleotide of claim 1, comprising the cDNA coding  
2                   sequence of ATCC Deposit Nos. PTA-1562 and PTA-1563 and PTA-1573.
- 1                   6.     An isolated CLASP-2 polynucleotide comprising a nucleotide  
2                   sequence that has at least 90% percent identity to SEQ ID NO: 1, 3, 5 or 9.
- 1                   7.     An isolated polypeptide comprising a nucleotide sequence that has at  
2                   least 90% sequence identity to SEQ ID NO: 2, 4, 6 or 10 and is immunologically  
3                   crossreactive with SEQ ID NO: 2, 4, 6 or 10 or shares a biological function with native  
4                   CLASP-2.
- 1                   8.     A vector comprising the polynucleotide of claim 1.



- 1                    9.     An expression vector comprising the polynucleotide of claim 1 in  
2     which the nucleotide sequence of the polynucleotide is operatively linked with a regulatory  
3     sequence that controls expression of the polynucleotide in a host cell.
- 1                    10.    A host cell comprising the polynucleotide of claim 1, or progeny of the  
2     cell.
- 1                    11.    A host cell comprising the polynucleotide of claim 1, wherein the  
2     nucleotide sequence of the polynucleotide is operatively linked with a regulatory sequence  
3     that controls expression of the polynucleotide in a host cell, or progeny of the cell.
- 1                    12.    The host cell of claim 10 which is a eukaryote.
- 1                    13.    The polynucleotide of claim 1 that is an antisense polynucleotide less  
2     than about 200 bases in length.
- 1                    14.    An antisense oligonucleotide complementary to a messenger RNA  
2     comprising SEQ ID NO: 1, 3, 5 or 9 and encoding CLASP-2, wherein the oligonucleotide  
3     inhibits the expression of CLASP-2.
- 1                    15.    An isolated DNA that encodes a CLASP-2 protein as shown in SEQ ID  
2     NO: 2, 4, 6 or 10.
- 1                    16.    The polynucleotide of claim 1 that is RNA.
- 1                    17.    A method for producing a polypeptide comprising:  
2                    (a) culturing the host cell of claim 10 under conditions such that the  
3     polypeptide is expressed; and  
4                    (b) recovering the polypeptide from the cultured host cell or its cultured  
5     medium.
- 1                    18.    An isolated polypeptide encoded by a polynucleotide of claim 1 (a) or  
2     (b).
- 1                    19.    The polypeptide of claim 18 that has the amino acid sequence of SEQ  
2     ID NO: 2, 4, 6 or 10, or a fragment thereof.



1                    20.    The isolated polypeptide of claim 18, wherein the polypeptide is cell-  
2    membrane associated.